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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,359	02/13/2004	Michael J. Duff	DFF-001,	7899

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EXAMINER

KOVALICK, VINCENT E

ART UNIT	PAPER NUMBER
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2629

MAIL DATE	DELIVERY MODE
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01/28/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/779,359

Applicant(s)

DUFF, MICHAEL J.

Examiner

Vincent E. Kovalick

Art Unit

2629

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,9-12,16,18-20,23 and 24 is/are rejected.
- 7) ☒ Claim(s) 3-8,13-15,17,21 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/14/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to Applicant's Patent Application, Serial No.10/779359, with a File Date of February 13, 2004.

Claim Rejections - 35 USC § 103

2. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thiele (USP 3,372,789).

Relative to claim 1, Thiele **teaches** a keyboard with immobile touch switches (col. 1, lines 15-24); Thiele further **teaches** an input device, comprising: a key for causing generation of a key event when the key is activated, the key having a concave surface that forms a well with an open interior region defined by sides of the well; a light emitter positioned at one side of the well emitting a beam of light across the open interior region to an opposite side of the well; and a light detector positioned at the opposite side of the well for receiving the beam of light and for indicating activation of the key when the beam of light is obstructed from being received by the light detector (col. 1, lines 15-25 and 56-70; col. 3, lines 5-33 and Fig. 1)

It would have been obvious to a person of ordinary skill in the art at the time of the invention that the limitations as taught by Thiele satisfy the limitation as set forth in claim 1 of the instant invention.

The difference between the teachings of Thiele and that of the instant invention is that Thiele invention is directed to a keyboard with immobile touch switches whose construct and arrangement are very simple and whose operation is safe and not susceptible to the influence of interference impulses.

Regarding claim 2, Thiele further **teaches** the said input device, further comprising a top surface, and wherein the concave surface of the key is depressed below the top surface of the input device.

3. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thiele as applied to claim 1 in item 2 hereinabove, and further in view of McDonald (USP 4,334,280).

Regarding claim 9, Thiele **does not teach** the said input device further comprising a speaker for emitting

an audible signal in response to an activation of the key.

McDonald **teaches** a system an method for providing an audible sound and a tactile feedback in an electronic data processing system (col. 1, lines 1-68 and col. 2, lines 1-17); McDonald further **teaches** said input device further comprising a speaker for emitting an audible signal in response to an activation of the key (col. 11, lines 6-16).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Thiele the feature as taught by McDonald in order to provide an electronic data processing system having manually operable input means for providing audible feedback to a user each time the input means is operated.

Regarding claim 10, McDonald further **teaches** the said input device further comprising circuitry for electrically generating an audible signal in response to an activation of the key (col. 11, lines 6-16).

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katrinecz, JR. et al. (Pub. No. 2001/0002166). taken with Thiele.

Relative to claim 11, Katrinecz, JR et al. teaches a low power low cost illuminated keyboard and keypads (pg. 1, paras. 0002 and 0008); Katrinecz, JR et al. further **teaches** A method for generating a key event to be sent to a computing device (pg. 1 para. 0002).

Katrinecz, JR et al. **does not teach** associating a key structure for causing generation of the key event when the key structure is activated; emitting a beam of light from one side of the key structure to an opposite side of the key structure; detecting the beam of light at the opposite side of the key structure; and signaling activation of the key structure upon detecting obstruction to the beam of light.

Thiele et al. **teaches** associating a key structure for causing generation of the key event when the key structure is activated; emitting a beam of light from one side of the key structure to an opposite side of the key structure; detecting the beam of light at the opposite side of the key structure; and signaling activation of the key structure upon detecting obstruction to the beam of light (col. 1, lines 15-25 and 56-70; col. 3, lines 5-33 and Fig. 1).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Katrinecz, JR et al. the feature as taught by Thiele in order to put in place the

means to generate a key event initiated using an immobile data input means.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over McDonald taken with Thiele as applied to claim 11 in item 4 hereinabove and further in view of Ostergard et al. (Pub No. 2003/0202336).

Regarding claim 12, McDonald taken with Thiele **does not teach** the method step comprising illuminating the key structure in response to the activation of the key.

Ostergard et al. **teaches** an integrated light –guide and dome-sheet for keyboard illumination (pg. 1, paras. 0004-0009); Ostergard et al. further **teaches** the method step comprising illuminating the key structure in response to the activation of the key (pg. 3, para. 0043 and Abstract).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by McDonald taken with Thiele, the feature as taught by Ostergard et al. in order to illuminate the key structure when it is in an active state.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katrinecz, JR. et al. taken with Thiele as applied to claim 11 in item 4 hereinabove, and further in view of McDonald.

Regarding claim 16, Katrinecz, JR. et al. taken with Thiele **does not teach** the method step comprising means for electronically generating a sound in response to the activation of the key structure.

McDonald **teaches** The method of claim 11, further comprising electronically generating a sound in response to the activation of the key structure (col. 1, lines 6-16).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught by Katrinecz, JR et al. taken with Thiele the feature as taught by McDonald in order to put in place manually operable input means for providing audible feedback to a user in response to the activation of the key structure.

6. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Katrinecz, JR. et al. taken with Kaikuranta et al. (USP 2001/0048379) .

Relative to claim 18, Katrinecz JR. et al. **teaches** a keyboard for providing key events to a computing device, the keyboard comprising: a plurality of keys, each key causing generation of an associated key event when that key is activated (pg. 1, para. 0001).

Katrinecz JR. et al. **does not teach** a light source system illuminating each key independently of the other

keys of the plurality of keys.

Kaikuranta et al. **teaches** a light source system illuminating each key independently of the other keys of the plurality of keys (pg. 1, paras. 0001 and 0007)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide to the device as taught Katrinecz, JR. et al. the feature as taught by Kaikuranta et al. in order to put in place the means to illuminate individual keyboard keys independent of other keys on the keyboard.

Regarding claim 19, Katrinecz et al. further **teaches** the said keyboard of wherein the light source system includes means for illuminating one of the plurality of keys with a first color and another of the plurality of keys with a second color (pg. 1, para. 0008).

Relative to claim 20, Kaikuranta et al. further **teaches** the said keyboard wherein the light source system includes means for illuminating one of the plurality of keys with a first color while another of the plurality of keys is unlighted (pg. 1, para. 0007).

7. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thiele.

Regarding claim 23, Thiele **teaches** a keyboard for providing key events to a computing device, the keyboard comprising: a key for causing generation of a key event when the key is activated; and means for activating the key without physically touching the key (col. 1, lines 15-25).

It being understood that in the teachings of Thiele, even though reference is made to touching the concave cavities, it is the actual interrupting of the light beam that causes the key related event and not the contact of the finger with the key cavities.

8. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katrinecz, JR. et al. taken with Thiele.

Relative to claim 24, Katrinecz, JR. et al. **teaches** a computing device, comprising an input device for receiving input signals from a user of the computing device, the input device having a plurality of keys, each key causing generation of an associated key event when that key is activated (pg. 1, para.0002).

Katrinecz JR. et al. **does not teach** each key having a concave surface that forms a well with sides and an open region defined by the sides, a light emitter positioned on one side of the well emitting a beam of light across the open region to an opposite side of the well, and a light detector positioned at the opposite

side of the well for receiving the beam of light and for indicating activation of that key when the beam of light emitted by the light emitter is obstructed from being received by the light detector.

Thiele **teaches** each key having a concave surface that forms a well with sides and an open region defined by the sides, a light emitter positioned on one side of the well emitting a beam of light across the open region to an opposite side of the well, and a light detector positioned at the opposite side of the well for receiving the beam of light and for indicating activation of that key when the beam of light emitted by the light emitter is obstructed from being received by the light detector (col. 1, lines 15-25 and 56-70; col. 3, lines 5-33 and Fig. 1).

means to enable an computer input device to realize a data input event when a users finger interrupts a light beam generated across the opening of a concave keyboard key structure to initiate a key activation event.

Allowable Subject Matter

9. Claims 3-8, 13-15, 17 and 21-22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Relative to claim 3, the major difference between the teaching of the prior art of record (USP 3,372,789, Thiele; USP 4,334,280, McDonald and Pub. No. US 2001/0002166, Katrinecz, JR. et al. and that of the instant invention is that said prior art of record **does not teach** an input device wherein the beam of light is infrared light.

Relative to claim 4, the major difference between the teaching of the prior art of record and that of the instant invention is that said prior art of record **does not teach** an input device wherein the well is a first well and the key has a second concave surface defining a second well situated above the first well.

Relative to claim 5, the major difference between the teaching of the prior art of record and that of the instant invention is that said prior art of record **does not teach** an input device further comprising a light source illuminating the interior region of the well.

Relative to claim 13, the major difference between the teaching of the prior art of record and that of the instant invention is that said prior art of record **does not teach** changing a color of

illumination of the key structure when the key structure is activated.

Relative to claim 15, the major difference between the teaching of the prior art of record and that of the instant invention is that said prior art of record **does not teach** detecting the beam of light at the opposite side of the key structure after the key is activated, and locking the key structure in an activated state until obstruction to the beam of light is subsequently detected.

Relative to claim 17, the major difference between the teaching of the prior art of record and that of the instant invention is that said prior art of record **does not teach** the method step of selecting the type of sound generated.

Relative to claim 21, the major difference between the teaching of the prior art of record and that of the instant invention is that said prior art of record **does not teach** a keyboard, wherein the light source system includes means for illuminating one of the plurality of keys with a first color when the key is activated and for illuminating that one key with a second color when the key is in an idle state.

Relative to claim 22, the major difference between the teaching of the prior art of record and that of the instant invention is that said prior art of record **does not teach** a keyboard wherein the light source system includes means for illuminating one of the plurality of keys with a first color and for transitioning gradually from the first color to a second color in response to a change in state of that one key.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No.	5,909,028	Yamamoto
U. S. Patent No.	4,163,883	Boulanger
Pub. No.	US 2003/0067758	Shipman

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To Respond

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E. Kovalick whose telephone number is 571-272-7669. The examiner can normally be reached on Monday-Thursday 7:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Vincent E. Kovalick
January 18, 2008



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